The Therapeutics of Kola.

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Press of
Parke, Davis & Company,
DETROIT, MICH.

THE THERAPEUTICS OF KOLA.*

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To one who carefully reads the contributions to therapeutical literature, the various papers, scientific, semi-scientific and popular, which have been published in recent months about kola are by no means unfamiliar. There are two reasons why this statement is true; first, the press reports to be found in the daily journals suggest in the general tenor of their contents that they are the same old reports which appeared in the earlier years of the last decade concerning the increased powers of muscular endurance which came about after the ingestion of the *Erythroxylon Coca;* the same properties now are attributed to the kola seeds. Secondly, ten years ago the physiological action of the African kola was well known, thanks to the work of Monnet, so that the drug is known to the well-read physician, and it is a little difficult to understand why, at the present time, kola is attracting so much attention. Within a few years West Indian kola has been introduced into the market, but since no variation in therapeutic effect is claimed, it need not be considered, apart from the likelihood of its being obtained in fresher condition than is the African kola; but of this more will be said later. The patience of the average medical reader has doubtless been sorely tried and his credulity severely taxed by the above-mentioned daily press reports; yet, since out of the exaggerations of the literature concerning *Erythroxylon Coca* came an accurate and working

*Read before the Clinical Society of the New York Post-Graduate Medical School, October 25, 1895.

physiology of cocaine, so even from these contributions to journalistic fiction the medical profession may come to a proper appreciation of the true value of kola.

In 1883 the seeds as then obtained were very dirty and associated with all sorts of refuse. My personal experience with kola dates to 1887, although I knew something of it from the literature six years earlier, when I used a fluid extract of the seeds made by a skillful local pharmacist I well remember the seeds. As then obtained they were dry, sound and free from intermixture with decayed seeds, but from them was obtained a preparation which gave one symptom in a more marked degree than any preparation of kola, and I have used all which I could obtain, and that symptom was persistent wakefulness. It was this preparation to which I alluded in the discussion on pneumonia at the New York Academy of Medicine in 1892, and the statement then made has been quoted by Shoemaker and others. These observations and the inferences to be drawn from them have an important bearing upon the claims, so persistently advanced, that freshness is a necessary quality of the seeds if one would be assured of their therapeutic activity. As is well known, the caffeine percentage increases in coffee on drying; why not in kola? Further, although it is possible to obtain fresh specimens of kola seeds in the market, is it likely that this will be the case when the transportation is *via* the Soudan from Central Africa, which is certainly well beyond the limits of express traffic? Certainly there is no preparation at present in the market, whether made from seeds certified to be fresh or from seeds that are fresh, without its being claimed that they are, which will give rise to such persistent wakefulness as did the fluid extract made from the old and dried seeds above mentioned. The suggestion is that caffeine is the more important constituent in kola; that was my opinion in 1887, and from frequent use of the many preparations in the market, I have never seen any reason to

change it. If caffeine, then, is the principal constituent of kola, drying the seeds not only does not impair their therapeutic efficacy, but on the contrary may even increase it. The physiology of caffeine is, as regards muscular work, precise. We know that it augments the activity of the motor part of the nervous system and that it prevents the breathlessness and palpitation consecutive to violent exertion. As an explanation of its action upon the central nervous system, we may say that the motor voluntary influx starts from the cerebrum with a greater energy, and that it acts on the motor spinal centres in a more excitable state. So far as its action upon the pulse and respiration go, not only are they not so much accelerated upon exertion, but the painful oppression consecutive to it is not felt. In other words, the caffeine puts a person who has not gone through a course of training in the state of one that has. Thus may be explained the results obtained from kola when used before and during active muscular exercise. When, further, it is borne in mind that in kola caffeine is contained in kola-red (Heckel) or kolanine (Knebel) in a nascent condition, to the extent, as has been claimed, of over 80 per cent., it can be readily seen that the conditions are favorable for the speedy utilization of the Caffeine and rapid development of its physiological effects. In this respect, then, kola is preferable to caffeine, but it should be regarded as a drug and not as a food. It is a drug of no mean potency when we remember that Lascelles-Scott found that kola contained 2.71 per cent. of the active principle.

Theobromine, differing from caffeine only by the omission of a methyl group, contained in kola to the extent of two hundredths of one per cent., possesses diuretic effects, and these more lasting than those of caffeine. Since theobromine does not exert any action upon the nervous system as does caffeine and it is but very slightly poisonous, even in large doses, which could not possibly be brought about by the use

of kola, because it is contained in it in so small a percentage, and because it is not likely to produce digestive disturbances, this constituent is a valuable one. Further, the patients do not become habituated to its use, nor is it cumulative in its action. Since, as Huchard has pointed out, the future of therapeutics lies in the diuretics, because the permeability of the kidney is the safeguard of the organism, be it healthy or diseased, permitting the elimination of the toxins which it produces or it receives, theobromine is an important constituent, for it has been shown to be a non-irritant diuretic, acting solely upon the epithelial renal cells and frequently producing copious diuresis even after a small dose. This effect is useful in that the results of nitrogenous waste from muscular exercise would be more rapidly eliminated and thus the feeling of fatigue lessened.

So far as the kola-tannic acid is concerned, about one and a half per cent., to this may we look for the beneficial effects upon diarrhœas. Although the statements of authors in regard to the results of its administration in diarrhœal conditions are true, so far as they relate to diarrhœas in debilitated individuals, I do not believe that there is sufficient tannic acid present to cause constipation in normal conditions of the intestinal tract; at least I have never observed that result. What is true of the action of kola upon persons who employ it as an assistance to the accomplishment of muscular exercise, that its action depends upon the nascent caffeine, is equally true when the drug is used as an agent for improving nutrition. Partly by increasing the force and frequency of the pulse the blood tension rises and metabolism is carried on more rapidly. Monnet believes that kola either augments the secretion of the gastric juice, or it acts upon the smooth fibres of the stomach, so that digestion is improved. This conclusion is undoubtedly correct, although the explanation may not be quite so simple as Monnet believed.

During the past eight years I have used kola, in various forms, in a large number and variety of pathological conditions and in varying amounts. It is not often that morbid somnolence appears as an absolute therapeutic indication, yet there are instances in which the cause can be definitely stated to be not dependent upon dyspepsia in its various forms, diabetes, lithæmia, gout, nervous exhaustion, or malarial diseases, which call for direct medication. In a recent instance a fluid extract of kola, made by Parke, Davis & Company, succeeded when caffeine alone and when combined with strychnine had failed. In this case it was necessary to increase the dose beyond that laid down (10 to 30 minims). When fatiguing literary work, protracted inspection of reports, long continued and especially monotonous mental exercise must be performed, kola is preferable to any drug with which I am familiar. In such conditions as pneumonia, when a cardiac stimulant is necessary, and caffeine is particularly indicated, kola is frequently serviceable, but as I have stated at another place, it is liable to cause wakefulness, and for that reason is not so useful as might be expected. The great role which kola plays in modern therapeutics is, without doubt, in diseases which are characterized by great nervous weakness and in the convalescence from acute diseases in which wasting is pronounced, of which typhoid fever is the type. Here I have found its greatest field of usefulness. Its marked effect in relieving the mental depression, the diminution of the natural tendency to faintness, the improvement in the appetite and digestion, the disappearance of nervous irritability, the acquisition of the ability to undergo muscular exertion, is too well known an essential to be lightly passed over. Much as the scientific physician may wish to discard the term "tonic" from his vocabulary, there yet remains a class of drugs, in which kola is of high rank, which is best so designated. No one disease is an indication for its employment, nor is any one disease an absolute contra-

indication. During the past year I have used the compound elixir of the manufacture noted above, which contains kola, coca and celery seed, of each forty grains to the fluidounce of menstruum, which has given me excellent results where neurasthenic conditions were prominent. This is of itself valuable, but is as well an excellent vehicle of pleasant taste for the administration of tincture of strophanthus, of nux vomica, or of digitalis. In the various other preparations, many of which are elegant, I have not had the same confidence; also some are so strongly alcoholic as to possess considerable attraction to those who prefer to take their indulgence under other than its true name. That kola is an antidote to the effects of alcohol cannot, I believe, be maintained.

Although the extravagant claims which have been made for Kola cannot be upheld, I am firmly of the opinion that it is a drug of sufficient value to have a permanent and important place in the Materia Medica. We may then conclude that

1. Kola is of value in the performance of muscular feats from the caffeine which it contains in a nascent condition.

2. Kola is invaluable for the relief of the symptom of morbid somnolence.

3. Kola is specially indicated in the convalescence from acute diseases, in chronic affections marked by nervous debility, and as a vehicle for the administration of cardiac stimulants.

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